FIG. 1.—FRIEZE FROM THE BASILICA ÆMILIA.*

ARCHITECTURAL RESULTS OF THE LATEST EXCAVATIONS IN THE FORUM AT ROME.

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WHEN the three or four villages which occupied the sacred soil of Rome, the Latin village of the Palatine, the Pelasgic of the Capitoline, the Etruscan of the Cælian, and the Sabine of the Quirinal, were amalgamated into one city by one of the early kings, a piece of ground was set apart in the intermediate valley as a common market-place, as a common place of assembly—better known by the name of Forum. There was another landmark in those early days, the path which crossed the valley of the Forum lengthwise, forming the main artery of communication between the various tribal settlements; and this became, in progress of time, the celebrated Sacra Via. It is over this Forum and over this Sacred Way that I shall take the liberty to guide you this evening, that we may examine and study together the results of the latest excavations, and of the latest discoveries.

The reason why such splendid success has attended these excavations in a district which has been searched and laid bare so many times before is very simple. Former excavations, including those in which I have had a personal share since 1870, have always stopped at the higher level of ruins. As soon as the pavement of a street, of a house, of a public building, was exposed to view, we were asked to stop, without being able to ascertain whether under those structures of the late Empire there were deeper and older strata of even greater archæological interest. For instance, when the pavement of the Vicus Vestæ was laid bare in 1882, the search was given up as soon as the first paving-stones came in sight. Two or three years later Professor Richter was able to discover the foundations of the triumphal arch dedicated

* The illustrations to this Paper are reproduced from the lantern slides shown at the Meeting.

by the S.P.Q.R. to Augustus after the victory of Actium, only eight or ten inches below the level at which our search had stopped. In like manner, the oldest existing relic of Rome, viz. a tholos or conical-domed cistern, of Mykenæan type, has just been discovered on the Palatine hill, eight or ten inches below the level of the neighbouring ruins. Considering these things, and remembering that the Roman Forum and the region of the Sacra Via were swept by fire and rebuilt *ex-novo* at least four times under the Empire, the determination was taken to probe that precious piece of ground down to the level of the virgin soil, wherever it was possible to do so without injury to the higher and later structures. The works have been carried out in the most admirable manner by our colleague, Comm. Giacomo Boni, in conjunction with a committee of four archæologists, of which I am myself a member.

The results of this campaign have surpassed our most sanguine expectations, not so much in the field of art in general and of architecture in particular, as from the archæological and historical point of view. But, modest as they are, the architectural discoveries are undoubtedly worthy of being brought to your notice. I shall indicate to you the most remarkable points, if you kindly follow me in a short but I hope delightful walk over the Forum and the Sacra Via.

Let us start from that special section of the Forum which was called Comitium, and which occupied the space between the north end of the Forum itself and the Senate-house. Here, in the spring of last year, a monument was found which was identified at once with the heroon, or cenotaph, or empty grave of Romulus, the founder of the city—a monument seen and described or spoken of by many historians of early Rome. The announcement of this extraordinary find was received by the modern negative or hypercritical school with an outburst of hilarity, and we—believers in the authenticity of Roman tradition in its fundamental lines—were scorned and taxed with childish credulity.

Nearly two years have elapsed since the finding of that monument, and the controversy concerning its nature and date and destination has ended in our favour. We can announce now without hesitation that this monument is the identical one raised in honour and in memory of Romulus at the time when Rome was still ruled by the kings, and that we behold, that we can touch with our own hands, the cenotaph of the hero who founded our native city 2,653 years ago.

While among the primitive tribal settlements of Pelasgic origin all the dead were regarded as becoming in a sense gods (*dii manes*, *χθόνιοι*), and received duteous worship from the family at the family hearth, in like manner the founders of villages and cities and great benefactors were honoured by the villagers and citizens with public sacrifices and festivals on the anniversary day of the foundation of the settlement, which fell, for Rome, on the twenty-first day of April. The deification of Romulus is not a late Greek fable, as some recent critics contend, but a fact absolutely proved by the discoveries I am about to illustrate.

The heroon is, or was, composed of six parts or elements, namely :

(*a*) The cenotaph, or empty grave.
(*b*) The two lions which guarded it on either side.
(*c*) The pillar of honour.
(*d*) The stone inscribed with the *lex loci*, or rules concerning the local worship.
(*e*) The altar.
(*f*) The sacrificial stone.

The whole group was found embedded in layers of sacrificial remains, such as charred bones of victims, small vases, clay discs representing cakes, figurines of bronze or bone or clay representing men or women in the stiffness of death and draped in shrouds, pieces of *æs rude*, and so forth. And as the whole group lies at a considerable depth under the level

of the Imperial Comitium, so its site was indicated by a square enclosure, surrounded by a marble transenna, and paved with black stone—the famous *lapis niger* of Festus and Varro [fig. 2].

FIG. 2.—EXTERIOR VIEW OF THE NIGER LAPIS.

First as to the cenotaph. It has been found filled up with earth and decomposed organic remains, without any trace of a cinerarium or ossarium, which stands to reason, and in perfect accordance with the Roman tradition and the popular belief in the fate of Romulus, who was considered to have been bodily transferred to Olympus after his miraculous disappearance from the Campus Martius, where he was holding a review of the army.

The abundance of organic matter in the earth which fills the grave is easily explained if we remember the practice, so common in those times, of slaying the victims so that their blood might flow inside and give joy and satisfaction to the spirit of the hero and appease his wrath. The mysterious and irresistible power of the same spirit was symbolised by one or two lions—an Oriental conception which, originating in Egypt and Assyria, had spread from a remote period to the Ægean islands, to Greece, and was made popular in Italy by the Pelasgic immigrants. I need hardly quote the well-known instance of Leonidas, in whose honour a stone lion was set up on the very hillock in the pass of the Thermopylæ where he and his gallant followers had made their last stand. Varro, speaking of the same monument of Romulus which we have *re*discovered, uses the expression, "sicut in sepulchris videmus" ("as we see in other heroic tombs").

FIG. 3.—INSCRIPTION ON STELE—NIGER LAPIS.

Another characteristic of the graves of heroes were pillars of stones, first conical and tapering in shape, later on transformed into regular columns, of which the Columna Maenia, the pillar of the Charioteer, the naval pillar of Duilius are the oldest representatives in the Forum. The one discovered near the pedestal of the west lion, although mutilated by one-third, is still *in situ* to tell the tale. These tokens of honour in memory of great men and of public benefactors derive their origin from the men-hirs, or rude monolith obelisks so common in lands once controlled by the Druids—although they are by no means a Druidic

speciality, as is shown by the recent discovery of standing men-hirs made by Andrea Vochieri in the region of the Messapians near Taranto.

The interest of this beautiful chain of discoveries culminates in the inscribed stele or pyramid [fig. 3] still standing, after twenty-six centuries, on the identical site on which it was set up at the time of King Numa or King Servius. The inscription engraved on this rough block of tufa has been given the place of honour among the 95,000 epigraphic documents which have been collected all through the Roman empire for the Corpus Inscriptionum. It precedes by a couple of centuries what was considered up to the date of its discovery to be the very

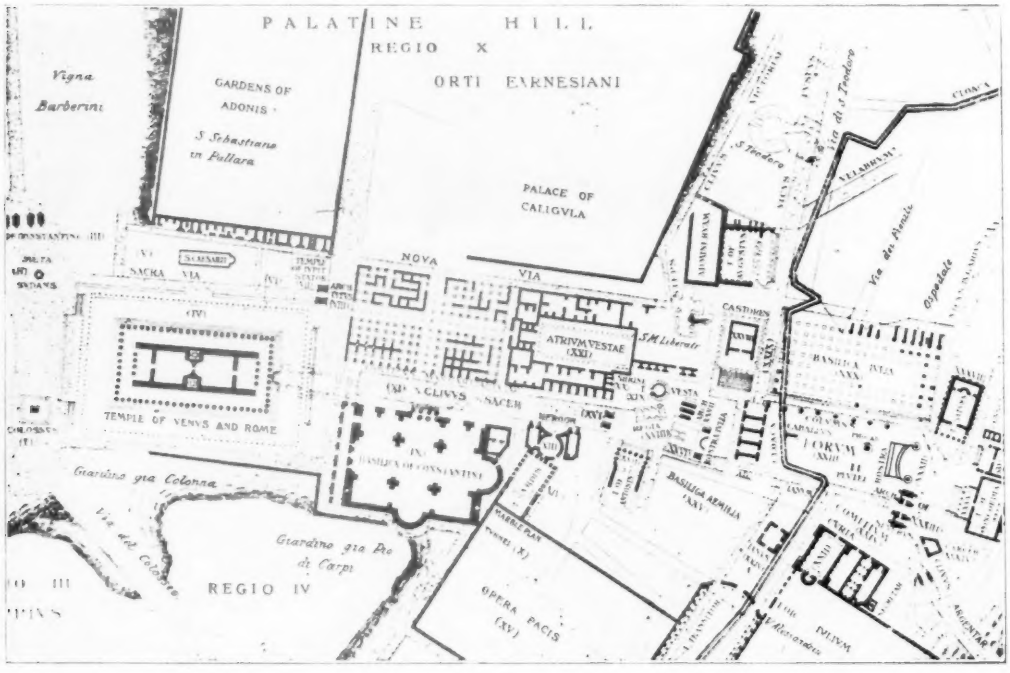

FIG. 3.—PLAN OF THE SACRA VIA.

oldest specimen of the Latin language and Latin palæography, the so-called cup of Dvenos, now in the Berlin Museum.

Much has been written, and disputed, about this remarkable stele during the last eighteen months, but glottologists and philologists disagree about it more violently than ever. The following three conclusions may be considered to give a fair and impartial view of the case:—

1. In the present state of glottological and philological science it is impossible to interpret an inscription which contains over sixty per cent. of words hitherto unknown and which is mutilated by one-half, if not by two-thirds.

2. Judging from the signification of the words which have passed into the Latin language, the stele must have contained regulations issued by the king-high-priest in connection with hero-worship at the grave of Romulus.

3. The date of the document is the first half of the sixth century before Christ.

In conclusion we have before us, for the first time as far as Roman excavations are con-

cerned, an heroic monument erected 2,600 years ago, by an Etruscan architect and stone-cutter, simple but not inelegant in his architectural conception. This venerable antiquity is by itself sufficient to place the heroon among the greatest discoveries of the age, even if you hesitate to connect it, as we do, with the founder of the city

Septem alta jugis, toto quae praesidet orbi !

And now let us resume our walk over the Sacra Via. Why this primitive line of communication between the Latin, Pelasgian (Saturnian), Sabine, and Etruscan villages, constituting the amalgamated city of Rome, came to obtain that name, it is difficult to say. One thing we know, at all events, that the Sacred Way is not an institution special to Rome. Sacred Ways are to be met with in the lands of the Druids—for instance, at Carnac, lined with thousands of sacred stones; they are to be met also in the British Isles, especially on the west coast. Such I believe to be the "Lines of Clava" near the battlefield of Culloden, and the lines in the Ross of Mull, where Dr. MacLachlan has traced for a distance of seven miles a series of granite monoliths, about six feet in height and spaced so that one is always in sight of the next.

The topography of the Sacra Via of Rome was, however, very different in kingly republican times from what it appeared under the Empire. Geological exploration of the ground has shown among other things that the primitive path crossed the ridge of the Velia, not by the Arch of Titus, as it does now, but some fifty yards north of it, where the church of S. Francesca Romana now stands. The furrow followed by the path was discovered by Nibby in 1832, by means of borings through the clay or marl strata of which the ridge is composed. The whole course of the primitive Sacra Via was irregular and winding, as becomes a much-frequented lane over undulating and broken ground, not yet encumbered by buildings or obstacles of any kind. But as soon as buildings began to be erected on either side it took a definite shape, and corners were substituted for windings, until the street was made to turn at right angles four or five times.

The transformation was obviously accomplished by degrees, first at the end of the Republic, when the street was made to run between the newly-erected temple of Julius Cæsar and the Forum, and last at the end of the classic Empire, when Maxentius erected the basilica or court-house which bears the name of Constantine.

The first newly-discovered monument we have to take into consideration is the Basilica Æmilia [fig. 5].

FIG. 5.—BASILICA ÆMILIA EXCAVATIONS.

The excavations began in June of last year, in that space of ground which had been so generously placed at our disposal by Mr. Philipps. We were sanguine at that time that the search would be crowned with signal success, because, among the 30,000 records of diggings which

I have collected for my *Storia degli Scavi di Roma* (to be published shortly), two or three only, and very doubtful ones, seemed to refer to that locality. The spade, however, has told a different tale, and we have learned by experience the possibility of this extraordinary fact: that a building of the first magnitude like this Basilica Æmilia, proclaimed by classic writers the finest of its class in the world, could have been excavated to the very root of the foundations, deprived of its hundred columns, that tens of thousands of feet of its gracefully carved marbles could have been burnt into lime or turned into new shapes and purposes, without a single record being left of the titanic deed of destruction.

The history of the place is briefly this. First constructed in 179 B.C. as a court-house by the censors, M. Fulvius Nobilior and M. Æmilius Lepidus, under the name of Basilica Fulvia, it was largely restored a century later by another Æmilius, Consul in 78. His son,

FIG. 6.—RESTORATION OF THE BASILICA ÆMILIA, BY SIGNOR GATTESCHI.

L. Paullus, having received from Julius Cæsar a share of the plunder of the Gauls, amounting to 1,500 talents, or £5,000,000, if gold be taken at twopence a grain, rebuilt the Basilica on a larger scale and with the most precious materials that the architectural market of the golden age could supply. The works lasted 25 years, and the solemn dedication took place in 34 B.C. Augustus and Tiberius brought the building to absolute perfection. Imagine therefore our bitter disappointment at finding the place not only a mass of charred remains, but altered in its original design, so that we can hardly make out where the central hall was, where the aisles, the vestibule, or the Chalcidicum, where the offices of the judges, of the clerks, of the lawyers, of the record-keepers.

We have learned, much to our regret, that the Basilica Æmilia must have been gutted and wrecked in the great fire of 283 under the Emperor Carinus: that it was hastily and disgracefully restored by the Emperor Diocletian in the clumsy style which characterises the

patchwork of the Decadence. We have learned also that whatever parts were left standing of the Basilica at the end of the fourth century were pulled down to make use of the materials for the building of the church of St. Paul on the road to Ostia.

And now that I have given you the painful side of the case, let me add, by way of consolation, that by probing into the quick of the old Basilica, by tracing the lines of the

FIG. 7.—TEMPLE OF ANTONINUS AND FAUSTINA.

foundation walls, by sorting the fragments of its architectural decorations, we have been able to reconstruct the original design in plan as well as in elevation, as shown in the restoration [fig. 6], a much appreciated work of my friend and pupil, Signor Giuseppe Gatteschi.

Progressing along the Sacra Via towards the ridge crowned by the Arch of Titus, let me mention incidentally that the temple of Antoninus and Faustina [fig. 7] has gained not a little in appearance by the latest operations. Not only has the beautiful structure been freed from

its ignoble surroundings, but it has been restored to its original height and to its original perspective point of view; in other words, it has been found that the pavement of the Sacra Via which runs in front of the pronaos is four feet higher than the original one; and that there were five steps of the original stairs buried under the mediæval pavement. This last has been removed, the five steps rediscovered, and the temple made to appear again under the noble and slenderly graceful proportions of its original design.

The road we are following must have obtained the name of Sacred from the three sacred huts which lined its southern border, the huts of the domestic gods or Penates, the hut of the perpetual fire, and the hut where the high priest was wont to reside. The hut was subsequently transformed into an exquisite marble building, on the outside walls of which were engraved the Fasti Cons. et Triump., *i.e.* the official records of Roman history and chronology. The Fasti Triumphales began with the victory of King Romulus over the people of Cænina; the Fasti Consulares with the name of Brutus, who was raised to the dignity of Consul soon after the expulsion of the last king, Tarquinius Superbus. This beautiful building, one of the most interesting in the Roman world from an architectural and historical point of view, was found almost intact by the builders of St. Peter's in 1543. It took thirty days to destroy it to the level of the foundations: and many invaluable records of names and dates perished in the limekiln. What is left *in situ* to tell the tale of the Regia is shown in the illustration, fig. 8.

Two relics of the Regia more particularly claim our attention: the circular structure in the inner hall which appears so conspicuous in this photographic view, and a store pit or underground tholos, of which only the opening is seen level with the floor, near the remains of a square altar.

FIG. 8.—RELICS OF THE REGIA, SHOWING THE SACRARIUM MARTIS.

It has been suggested that the circular base may be a relic of the sanctuary in which the spears of Mars were kept; while the store-pit and the altar have been identified with the *Ops consivia*, a goddess of harvest, whose presence and worship in the Regia are attested by many historians of early Rome. "It is not without emotion," says Boni in his last contribution to the *Nineteenth Century*, "that we turn our attention to the nature and object of these sacraria, connected as they are with the age when man lived in harmony with nature, and when every natural mystery was to him a sacred one."

The spears of the Regia were venerated as the weapons of Mars, the mythical father of Romulus. They were wooden rods with metal points, two of which have actually been found in the present excavations of the Forum, although at a great distance from the Regia. The chapel in which they were kept was an actual and genuine seismographic observatory, where earthquakes were observed, registered, and expiated. The registers of these observations, made by means of the oscillations of the spears (and possibly of the sound they produced by striking a sonorous surface in their vibrations), seem to have been kept from a very early date,

because Aulus Gellius, who has borrowed more than once information from such a document, calls it "veteres memoriæ," (old records).

But let us leave the Regia and step just across the lane which divides it from the Cloisters of the Vestals, that I may point out to you certain incidents in the history, and certain particulars about the architecture of the place which have lately been ascertained.

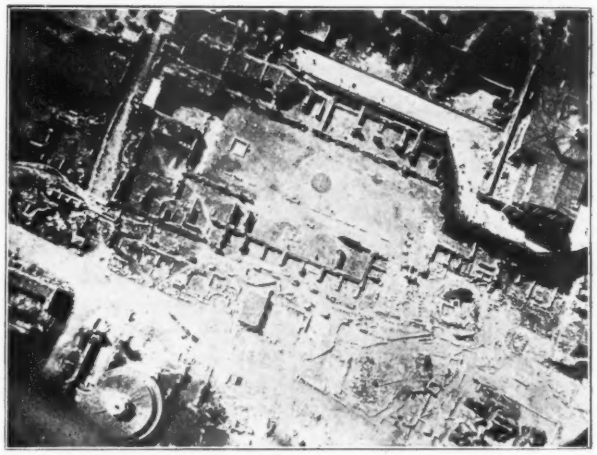

FIG. 9.—HOUSE OF THE VESTALS—BALLOON VIEW.

Vesta was regarded as the tutelar goddess of the Roman Empire: the keeping of the perpetual fire on her altar was considered the token of the perpetuity of the Roman domination over the world. Her worship was so closely connected with the very existence of the commonwealth, that when the seat of government was transferred by Augustus from the Forum to the Palatine Hill, another temple of Vesta had to be built in connection with the imperial palace, so that the goddess might closely watch over, inspire, and protect the ruler. Vesta, moreover, was the virgin goddess *par excellence*; she had bound herself to perpetual chastity since the days when Apollo and Poseidon were pressing her into marriage. Any infraction of the vows of chastity which her priestesses made on entering the cloisters was punished with the most horrible of deaths. Vesta the Virgin was at the same time called Vesta the Mother, in connection with the commonwealth placed under her maternal care.

FIG. 10.—THE AUGUSTEUM.

As soon as Constantine gave peace and freedom to the Church, Pope Sylvester determined to oppose to the superstitious worship of the virgin-mother goddess, that of the Immaculate Mother of the Redeemer. And as in those days the Christians abhorred the idea of making use of heathen temples, and of burning incense on the same altar where sacrifices had been offered to the false gods, Pope Sylvester did not occupy any part of the great cloisters of the Vestals, but the back or inner hall of the Augusteum, a hall which had been used for centuries for the posting of state notices and imperial decrees. And here the image of Mary was raised almost face to face with that of Vesta, the two places of worship being separated only by a narrow street. It is the

recollection of these historical events that makes this corner of the old Forum one of the most interesting in the whole city. On entering the Cloisters of the Vestals by the ædicula the first monument you meet is the pedestal of Claudia, the first and the only priestess of Vesta who gave up her exalted position to embrace the Christian faith; and stepping across the Nova Via you enter this colossal temple of the deified Roman emperors, the excavation of which was still progressing when I left Rome at the end of last spring. I believe that architects will find in this Augusteum a new and unexpected subject for their studies, so different is the plan and the elevation of the building from any known design of a Roman public building, and so wonderful is its preservation. The building does not stand isolated on its own ground, but it is connected with the palace of Caligula, and with the state stairs which descend to it down to the level of the Forum. We are told by the biographer of that crazy young emperor how he used to steal unobserved out of his apartments and enter by a back postern the temple of Castor and Pollux, and seat himself between the images of the two heroes, so as to obtain a share of the divine honours paid to them by the unsuspecting worshippers. We already know from the discovery of other such stairs within the palace how the imperial architects, possibly the emperors themselves, objected to steps, and that whenever the plan of the building allowed it to be done, they substituted for steps inclined planes, with an easy gradient of 6 or 7 in 100, interrupted by horizontal landings. Such is also the design of the newly discovered descent trodden by the feet of Caligula on his way to the temple of Castor and Pollux. And when the building was Christianised by the victorious Church, and took the name of S. Maria Antiqua, and was placed under the keeping of Greek monks, its walls were covered with frescoes representing Biblical scenes, scenes from the New Testament, figures of saints, and even of historical personages, like Pope Paul I., under whose pontificate (757–768) most of these frescoes were painted by Byzantine artists. It is a remarkable evolution of fate, indeed, that, following in the footsteps of Caligula down the "escalier d'honneur" of the imperial palace, we should meet with the solemn figures of Eastern and Latin saints, Blasius, Benedict, Christopher, Basilius, and Laurence, painted by Byzantine artists centuries ago!

Rome is indeed a singular and unique city! It is only among her noble ruins that you find wonderful corners like this, where without any effort of imagination, but at the simple sight of your surroundings, your meditations are led over the lapse of centuries, from the worship of the Madonna to that of Vesta, from the temple of the gods who announced to the Romans the victory of Lake Regillus, to the Olympian abodes of the deified Cæsars, from the monastery of the Basilian monks to the cloisters of the Vestal Virgins, from the solemn chant of the Psalms to the singing of Horace's Carmen Sæculare!

I have only one more discovery to mention, that of the Imperial warehouses for Indian goods which have been brought to light on the left of the ascent. This establishment, officially known by the name of Horrea Piperataria, was built by the Emperor Domitian about 84 A.D., for the storage of the spices named and described by Pliny in the twelfth book of the Natural History, and especially of pepper, the use of which had become popular in Rome after the conquest of Greece. Hence the name of Horrea Piperataria. These spices were shipped from the Indian ports and from the Malay isles to the Red Sea, and were landed either at Berenice or at Myoshormos. Berenice and Myoshormos were connected with the port of Coptos on the Nile by a splendid military road, built by the imperial engineers across the eastern desert about the time of Augustus. The road, 257 miles long, was abundantly provided with water-tanks at regular intervals, as well as with bungalows and military posts for the protection of the caravans against the marauders of the desert. The *quais* or wharves of Coptos on the Nile must have presented a lively and picturesque scene on the

arrival of one of these Indian caravans, when the camels were made to kneel at the water's edge, and the bales of precious merchandise were transferred from their backs to the barges moored alongside.

From the barges of the Nile the spices were transferred on board the *classis Alexandrina*, a fleet of merchantmen plying twice a year between Alexandria and Ostia, the arrival of which in sight of Cape Misenum was telegraphed to Rome by means of the semaphores or beacon-lights with which the Tyrrhenian coast was abundantly provided.

The warehouses for the safe-keeping and retail sale of the precious spices in the interest of the Crown were built, as I said, by the Emperor Domitian, on the slope of the Velia, north of the Sacra Via, on the site where now stands the Basilica of Constantine. They lasted just a century, having been wrecked and gutted in the memorable fire which destroyed the whole quarter of the Sacra Via A.D. 191, a few weeks before the death of Commodus. We are supplied with thrilling details about this fire by Herodianus and Galen, the latter of whom had his office, pharmacy, and consulting-rooms next to the warehouses, and lost by the fire several valuable MSS. which he had left inadvertently on the desk. The warehouses were never rebuilt after the fire. Their site was occupied at a later date by the Basilica of Constantine.

To conclude. Considering the happy results of the latest excavations of the Forum and of the Sacra Via, we must be grateful to the Italian Administration of Antiquities, and to our colleague Comm. Boni, for the scheme so cleverly planned and so skilfully carried into execution, not to stop any more in our search at the level of the classic buildings of the Empire, but to reach, whenever we can do it without injury, the lowest and deepest strata, contemporary or even anterior to the foundation of Rome. The problem, of course, is an exceedingly difficult one when you have many monumental superposed layers to contend with, and I do not deny that mistakes have been occasionally made in the course of this last campaign. But the system is the only exhaustive and satisfactory one; and by following it with care in the present and future investigations we shall be able, I am sure, to ascertain the true origin of Rome, and the nationality, the stage of civilisation of the original tribes which, either by sea or by land, first entered Italy, the garden of Europe, and settled on the sacred soil of Latium!

DISCUSSION OF PROFESSOR LANCIANI'S PAPER.

The President, Mr. WILLIAM EMERSON, in the Chair.

MR. F. C. PENROSE, F.R.S., Litt.D., D.C.L. [*F.*], said he was sure he should have the complete concurrence of the audience in asking for a vote of thanks to Professor Lanciani for his eloquent and most interesting account of the excavations in the Forum. He remembered visiting the Forum many years ago, in the time of Pope Gregory XVI., when it was in a very different archæological condition from what it is now. It then presented quite a picturesque scene—much more so than now, because the many objects scattered about, interesting as they are, rather rob it of the picturesque; indeed, all archæological excavation had to apologise for spoiling Nature's work. Nevertheless we are most thankful for such work, resulting as it does in the elucidation of history, and in the extreme interest of the objects turned up. With regard to the aggregation of the soil at Rome, referred to in the Paper, that was a matter to a certain extent familiar to us here; it is well known that Roman London is buried a great many feet below the present surface. He was interested to hear that these investigations, which had brought to light the work of the time of Romulus, and even his sepulture, and other periods in the early history of Rome, were only allowed where the excavation would do no harm to the interesting buildings of the classical time. That was a principle in excavation which should never be lost sight of.

SIR L. ALMA TADEMA, R.A. [*H.A.*], said that he also had devoted his existence to an attempt at reviving that phase of humanity and civilisation of which we are the outcome—viz. the civilisation of great Rome. Professor Lanciani had stimulated him more in that aim than any-

body else. In all his unwearied researches, in all his books, in his letters from Rome, he seemed to take one by the hand, and in his company one called on the old magnates who lived on the Esquiline, one visited the temples, walked about in the streets of Rome, and forgot that one was living in the nineteenth century. So it was only natural that he should wish to second a vote of thanks to the man who had again given them a peep at the days of Augustus and Diocletian, and at even much earlier days, those of Romulus—for Remus was then already forgotten. One of the most lasting impressions he received when visiting Rome last spring was on seeing, under the Lapis Niger, the dark hole, lit up by tapers, in which were the bases of the lost lions, together with the remnants of that archaic pillar bearing an inscription so ancient that our present knowledge does not enable us to decipher more than one third of it. Then he seemed to see the Etruscan-clad women walk reverently past that sacred spot, with their shoes curved upwards to keep off the ground their trailing dresses, which they otherwise held in one hand. Such moments transported him back to Etruria, which belonged to the European civilisation, whence it comes that in those characters on the stone are found so many forms similar to the runic inscriptions, which are also remains of the civilisation of ancient Europe.

Sir WILLIAM RICHMOND, K.C.B., R.A. [*H.A.*], expressed himself as feeling powerless to make any observations on the subject, he had been so engrossed and interested with the eloquent words of the lecturer. They would all agree with him that whenever we find comradeship with the Italians we feel that we are a common brotherhood with them. That great nation, if it did not run consecutively with the great arts of Greece, took up from Greece all that was beautiful, and transmitted from Greece over Europe to our barbaric isles all that was beautiful of which we know. Englishmen were desirous of harking back to those great classic ages of purity of thought, purity of design, and purity of construction, and Professor Lanciani had stimulated them. He had written a kind of epitome of ancient history. He had pointed out to them that Romulus was not a mythical person, just as it was now being pointed out to them in Crete that Minos was not a mythical person. It had been the fashion of late years to describe as mere myths the great characters in ancient history, and to say that so-and-so never existed, but was only an idea. They were, therefore, grateful to modern scholars for their researches into these matters, and for the evidence they produced that these ancient personages were not myths, but men.

Professor AITCHISON, R.A., *Past President*, said he had not come in the expectation of being asked to speak. It had been a delight to him to hear the interesting account Professor Lanciani had given of the excavations in the Roman Forum, which had gone so much farther than they had two or three years ago, when he was in Rome and saw the Shrine of Vesta, that was then being reconstructed. The black stone had not then been reached. The subject was too large a one for him to enter on, but what Professor Lanciani said about their being likely to find what were the origins of Roman architecture would be most valuable, for there was some mystery as to the way in which Greek architecture was transformed at Rome that had not yet been solved. It had been suggested that excavations and researches in the island of Sicily might show some of the steps by which Greek architecture had been turned into Roman. No doubt most of those present were acquainted with the Insurance Office in the Strand, which, he believed, was Professor Cockerell's first work in London, where the abacus of the Grecian Doric column was finished with a *cymatium*, which was from a supposed Greek example in Asia Minor, I think, the agora of Priene. There were innumerable questions, both æsthetic and constructive, which he hoped would be solved by some of the indefatigable archæologists. Where the Romans, for instance, learnt the use of concrete faced with bricks for their constructions, was at present unknown to him; but it was that discovery which made the Romans able to build their magnificent buildings in every part of the world. Mr. Alexander Graham some years ago found in Tunisia a large aqueduct that was made out of the soil mixed with lime and cast into blocks. It was also an interesting question when and where the Romans learnt to make the framework and eventually the skin of their vaults of brick, which M. Choisy had told them of in his *Art of Building among the Romans*. But of these various schemes that of concrete was the most valuable and the most lasting, for Professor Lanciani would tell them that, although stone buildings could be pulled down by lifting stone by stone, the walls of concrete faced with brick were obliged to be blasted.

Dr. MURRAY [*H.A.*], of the British Museum, said he agreed most cordially in the vote of thanks which had been proposed to Signor Lanciani for his interesting lecture. It was almost like revisiting Rome to see the slides and to hear them described and discussed so ably by a scholar who himself had done so much and had had so great a share in the archæology of Rome in our generation. He should like to include in the vote of thanks for the lecture which Signor Lanciani had given them that evening an expression of what they owed to him for his own extraordinary services to archæology during the last twenty-five years. It was, of course, not in Signor Lanciani's way to speak of himself, and he had not done it; but it was for them, who were behind the scenes

in some measure, and who knew what his great services had been, to remind their English brethren that no one perhaps at the present day, no Roman at all events, had rendered such great services as Signor Lanciani to the archæology of his native city.

THE PRESIDENT said that they were all deeply indebted to Professor Lanciani for his researches in Rome. Professor Lanciani had held the post of Assistant-Director of Excavations in Rome since the year 1871, and from that time to the present all his energies had been devoted to the work. Members were well acquainted with the works in the Institute Library the result of his labours, and had studied them, he was sure, with the deepest interest. Professor Lanciani had that year been the recipient of the Queen's Gold Medal, the first time it had been awarded to an Italian since it was conferred on Signor Canina in 1849, fifty-one years ago. But it was not only from the deep interest which they all felt in the architecture and archæology of ancient Rome, and not only from Professor Lanciani's connection with that city, but also because of the amicable political relations which existed between this country and Italy, that it had been such a pleasure to them to welcome Professor Lanciani on his visit to England. It was a source of regret to them last June that he had been unable to be present in person to receive the Gold Medal, but they were glad now to have the opportunity of giving him a cordial welcome, and also a very hearty vote of thanks for the magnificent Paper with which he had just favoured them. With regard to the data given by Professor Lanciani as to the accumulation of débris in Rome accounting for the great depth at which the oldest remains of Rome lie, he had been struck when in Rome with the strings of carts coming almost continuously into Rome from the Campagna laden with earth. He had been told by a resident that that had been going on from time immemorial. If that were the case this must also be taken as accounting for the depth at which the ancient buildings stood.

PROFESSOR LANCIANI, in responding, said that there were one or two points of no little interest to the British public in connection with this question. The first was this: that while every other nation was represented in Rome by an establishment of some kind to promote archæological, historical, and artistic studies—while France had the Ecole des Beaux-Arts and the Académie des Sciences, and while Germany had two institutions, Austria one, Hungary, Spain, Russia, and the United States two each—yet England alone had never been represented there. The reason for such a state of things was not because England or English students overlooked the importance of Rome—on the contrary, they had preceded all the other nations of Europe by one hundred years at least in the appreciation of Rome—and that appreciation had been a matter of some concern to him. He had been hunting for documents connected with Roman excavations, and on other matters connected with their Museum, and this was the eleventh time he had been obliged to come searching in England. In private houses in this country he had found things which nobody would expect to find. In one library—and by no means an important one—he had found in one room 2,927 unpublished drawings and water-colours of Roman excavations, got together by the original collector in the space of twenty or twenty-five years. Therefore, for one who like himself had devoted his whole life to the study of this subject, England was the place he had to do with more than Rome, because actually they had a far greater number and more important documents scattered over Great Britain than Rome itself possessed. It was, therefore, a matter for surprise that the people of this country had not given a substantial form to their appreciation of Rome by the establishment of a school there. This year, however, all difficulties had been overcome, and such a school was now an accomplished fact. It was beginning under extremely modest circumstances. Its aim was to provide somebody in Rome who would take care of English students. Whether they came from the Universities or as students from Art academies, they would find someone in Rome ready to help them, to smooth their way, to direct their first steps, to introduce them to the proper authorities, and to give them a shelter if they needed one. The initiative had been taken by the Oxford University, by a committee of Oxford men. The first Director had been appointed in the person of Professor Rushworth, who was keenly interested in the School, and who would be found a kindly, courteous gentleman. The School would be of the greatest advantage to students of architecture. In his many years' experience he had often known young students discouraged by their first steps in an unknown country where they had come to study. Now they would find in Rome an English house, with a countryman of their own to watch over their interests. The British Ambassador in Rome was greatly interested in the institution—indeed, they owed its foundation to him. They should send not simply archæologists alone—for archæology, though an exceedingly interesting study, was not perhaps so practical as artistic study. Other nations, and especially France, had found that there was much to be learned from architecture in Rome, and inspirations to be gathered there. The British School at Athens had been flourishing for a great many years, but though they got in Greece the foundation of artistic feeling, the foundation of whatever was beautiful and ideal and admirable, they did not get the application of these things of beauty to civic life. If they wanted to learn

how to apply the principles of Greek art in providing their cities with courthouses, with aqueducts, and even with warehouses, they would get this knowledge by studying the buildings of ancient Rome. He trusted their young men would take advantage of the opportunity now offered them. "Of one thing they may be sure," the speaker said in conclusion, "that, so far as it depends upon us, we love your country, we are prepared to devote ourselves unstintedly to the progress of the institution, and to place ourselves entirely at your disposal."

PROFESSOR AITCHISON, R.A., responding on behalf of the Meeting, said: Professor Lanciani, the President has given me permission to say a few words from us English here to-night to you and to your country, which has now taken its proper place in the comity of nations. We owe perhaps a greater debt of gratitude to Italy than to any other country in the world except ancient Greece. The Italians rescued the whole body of the classics, both Greek and Latin, carefully edited them, and sumptuously printed them. Without this passion for rescuing the MSS. without regard to cost, most of them would have perished; so this priceless boon was secured to the world—at least till the next Flood! This great work was mainly done by the Florentines; and Florence has been the modern Athens that gave us, too, one of the great poets of the world, Dante. The lost Codex of Vitruvius was found by Poggio in the monastery of St. Gall in 1414, and the *editio princeps* was printed in Rome in the same century. The Roman buildings and ruins were measured and studied by Brunellesco, and after him by Alberti, and an increasing number of students went to Rome to study, whose sketches and measurements are found in abundance in most of the great collections; but Alberti, Serlio, Vignola, Labacco, and Palladio, at least, published books of their sketches and measurements of Roman buildings, and Palladio has preserved for us all the Roman Thermæ that existed in his time. These drawings of his were first discovered and published by Lord Burlington in 1730: while all the celebrated Italian architects gave a stimulus to architecture by their own works. The lessons Sculpture and Painting got from the Greek and Roman sculpture were mostly learnt before this, for Ghiberti's Gates, which Michelangelo said were worthy to be the gates of Paradise, were done before 1455. But the blessings of the Renaissance were not confined to the improvement of the fine arts. The Renaissance was the new birth of man's intellectual freedom and intelligence by sweeping away the clouds of ignorance and authority, and giving man a free scope to find out what he could about the universe he was in. Every one of the new arts and sciences that almost bewilder us from their multiplicity owes its origin to this mighty effort of the Italians, so that we owe primarily to them the electric light which illuminates this room, the railways that brought us here, the telegraph that has annihilated time for us, and all those views of the earth, its inhabitants, and of our universe that now overwhelm us. I will not detain you, Professor Lanciani, nor the company longer than to say that we hope you will take, from the Englishwomen and Englishmen here to-night, our kindest and best wishes for the happiness of your people and your country—that country that Byron said "has the fatal gift of beauty."

THE HIGHER EDUCATION OF ARCHITECTS.

By Arthur Cates [*F.*].

II. THE COLLEGE OF ARCHITECTURE, CORNELL UNIVERSITY, ITHACA, N.Y.*

THE course of instruction at Columbia University, as detailed in the Journal, *supra*, pp. 16–19, may be accepted as expressing the most complete form of professional education yet arrived at, which could be given to ordinary students desiring to equip themselves for the practical duties of their profession, and to lay a sure foundation for the prosecution of their further studies in design and art, which their training would enable them to follow with advantage; but however satisfactory this might be in a professional view, those who had followed the course at the Ecole des Beaux-Arts, and had become inspired by the glorious aspirations there cultivated, desired that the study of design and art should occupy a more prominent position in the curriculum for the education of architects, and have recently succeeded in reorganising the course for many years in force at Cornell University, and incorporating therewith so much of the Beaux-Arts ideal as appeared suitable and possible.

The admission to the course is only to be gained by a special entrance examination, which requires a high standard of education in essential subjects, and thus enables the student who can pass so severe a test, to devote his time to the particular objects of the course, with greater power of grasping the technical subjects with which he would have to deal, and with greater advantage than if his earlier education had been less thorough.

Cornell University is a recent creation which owes its existence to the combined wisdom and bounty of the United States Congress, the State of New York, and Ezra Cornell; it was incorporated in 1865, and opened in 1868.

In 1862 an Act of Congress provided that public lands should be granted to the several States, "thirty thousand acres for each senator and representative of Congress," from the sale of which there should be established a perpetual fund, the interest on which should be appropriated to the endowment, support, and maintenance of at least one college in each State, where the leading object should be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life. No portion of the fund or the interest thereon could be used for the purpose of the erection or maintenance of any buildings.

At the same time Ezra Cornell* was dreaming of a project which he thus formulated: "*I would found an institution where any person can find instruction in any study*," and by the union of his own resources with the proceeds of the land grant he saw a way to the realisation of his purpose.

This union was effected by the Act of the Legislature of the State of New York of the 27th April 1865, establishing "Cornell University," and appropriating to it the income of the sale of public lands granted by Congress to the State of New York. The founder's broad conception of a University was reconciled with the narrower purpose of the Act of Congress by providing that "such other branches of science and knowledge may be embraced in the plan of instruction and investigation pertaining to the University as the trustees may deem useful and proper."

Ezra Cornell's direct donation to the University was, with several smaller gifts, $500,000 (£100,000), and 200 acres of land, forming—with other lands, 270 acres in all—the estate of the University at Ithaca, N.Y., of which about 70 acres are occupied by the buildings of the University, arranged in stately open order. His largest contribution was, however, in the shape of profits eventually made by the University, under his management, on the land scrip which he purchased from the State. These profits and his contribution, constituting the "Cornell Endowment Fund," now amount to about $4,000,000 (£800,000), while the proceeds of the lands sold by the State, $688,576 (£137,715), form the "College Land Scrip Fund," which latter fund is subject to the restriction of the Act of Congress, from which the former is free.

The University has largely benefited by liberal donations and endowments, among which the benefactions of Alfred S. Barnes, the Sage, McGraw, Fiske, White, and other families, and individuals have been considerable, while between 1870 and 1887 Hiram Sibley gave $180,000 (£36,000) towards the foundation and equipment of the "Sibley College of Mechanical Engineering

* Ithaca is a flourishing city, one of the most beautiful in New York State, situate about 180 miles north-west of New York City, at the south end of Cayuga Lake, surrounded by most charming and picturesque scenery.

* Ezra Cornell, a native of New York, born 1807, died 1874, was an electrical engineer, who devoted his life to the study and improvement of the magnetic telegraph, and thereby amassed a considerable fortune.

and the Mechanic Arts," to which Hiram W. Sibley added $50,000 (£10,000). H. W. Sage gave £50,000 for the establishment of the Sage College, an institution for women, connected with the University, in the teaching given by which its members should have equal rights with men. The Medical College was founded by the Trustees on receipt of a gift ample for the establishment and maintenance of a medical department of the University, while the Legislature of the State of New York established the Veterinary College and the College of Forestry as State institutions, administered by the Trustees of the University, and gives liberal grants in aid of the College of Agriculture.

The University comprises ten faculties—viz. the University Faculty (the graduate department); nine teaching faculties, viz., Arts and Sciences (the academic department, of very wide range of study), Law, Civil Engineering, Mechanical Engineering, Architecture, Agriculture, Veterinary Medicine, Forestry, and the Medical Faculty, these controlling nine separate departments or colleges, together constituting the University.

The departments attached to these faculties are fully staffed, and together enjoy the services of 126 professors and lecturers, 199 instructors and assistants, 45 special lecturers, 15 librarians and assistants (the library contains over 225,000 volumes*), with 24 other officers and assistants, in all a staff of 409 officers for instruction and administration, not including 28 University preachers.

Candidates for admission must be at the least sixteen years of age, and pass an entrance examination in (1) *English*, on books specially selected, from which the candidate is expected to learn to express himself readily and easily in accordance with the usages of ordinary prose composition; to master systematically the contents of certain books; to cultivate the habits of correct grammar and spelling, and of correct sentence structure, punctuation, and paragraphing. (2) *Physiology and Hygiene*, the human body, health notes, emergencies. (3) *History*, on two of the following: (*a*) the history of Greece to the death of Alexander, with due reference to Greek life, literature, and art; (*b*) the history of Rome to the accession of Commodus, with due reference to literature and government; (*c*) English history, with due reference to social and political development; (*d*) American history, with the elements of civil government. Geographical knowledge is tested by requiring the location of places and movements on an outline map. (4) *Plane Geometry*, with numerical problems and questions on the metric system. (5) *Elementary Algebra*, including the binomial theorem, quadratic equations, ratio and proportion.

In addition to this Primary Entrance Examination there is required for admission to the course leading to the degree of Bachelor of Architecture, an Advanced Examination in—1. *Advanced Mathematics*, including *Solid Geometry*: the properties of straight lines and planes, of projections, of polyhedrons, of the regular solids, of spherical triangles, and the measurement of surfaces and solids; *Advanced Algebra*: Proportion, the theory of powers and roots, the theory of quadratic equations, the theory and use of logarithms; permutations, combinations, and probabilities, &c. &c.; *Plane and Spherical Trigonometry*: the definition and relation of the six principal trigonometric functions, the properties of right and oblique plane triangles, the use of trigonometric tables, the application of trigonometry to surveying, &c. 2. *Advanced French*: (*a*) the translation at sight of standard French into clear and idiomatic English, to be acquired by reading not less than 600 pages of prose and verse from writings of at least four standard authors, of which a considerable portion should be translated into idiomatic English; (*b*) the translation into French of a connected passage of English prose, showing a thorough knowledge of accidence, and familiarity with the essentials of French syntax, the uses of tenses, moods, prepositions, and conjunctions; an examination in pronunciation and the writing of French from dictation is included; or *Advanced German*: (*a*) advanced grammar, tested by the translation into German of easily connected English prose; (*b*) translation at sight of ordinary German, facility in which may be acquired by reading at least 500 pages of classical and contemporary prose and poetry, one-half of which should be selected from the works of Lessing, Schiller, and Goethe.

The applicant must also present a Regent's diploma or a certificate of graduation from an approved school. The combinations recommended as most suitable for entrance to this course are physics, chemistry, geology, freehand drawing, and the alternative modern language.

For many years the patient and untiring efforts of Professor Babcock were devoted to the organisation of the teaching of this college on principles expressed by him in the admirable paper on "A Course of Instruction in Architecture," which he contributed to the meeting on "Education" held on the 4th May 1887* at the General Conference of Architects, a paper which greatly assisted the object of the meeting—the establishment of the present system of progressive examinations of the R.I.B.A.—and for which and for his courtesy in

* In 1888 Mr. H. W. Sage gave half a million dollars (£100,000) to the University, $200,000 (£40,000) to be devoted to the erection of a Library building, and $300,000 (£60,000) to be a permanent endowment, the income of which should for ever be devoted to the purchase of books.

* Fully reported in *The Builder*, 7th May 1887.

having hastened his departure from New York some days, in order to be present at the meeting, the Institute is under great obligation to him.

Professor Babcock's views may be expressed in a few words: "The object of a course in architecture should be not chiefly to develop the artistic powers of the student, but to lay that foundation of knowledge without which there can be no true art. Before an architect can become a true artist he must be master of the art of building, and also a man of science":—and on this basis the curriculum he adopted was founded. On his retirement from active duties as professor, the influence of the teaching of the Ecole des Beaux-Arts became paramount, and a reorganisation of the college followed, in which a large proportion of time is devoted to architectural design pure and simple.

1. Instruction.

The present course, under Professor Alexander Buel Trowbridge, is conducted by a staff of five instructors, consisting of a professor, two assistant professors (one of whom is "Architecte Diplomé par le Gouvernement de France"), an assistant professor of drawing and modelling, and an instructor in architectural drawing. The aid of specialists of the College of Civil Engineers in the subjects of descriptive geometry, mechanics, structural details, theory of the arch and stereotomy, heating and ventilating; and of the College of Forestry in timber physics and wood technology, is also obtained.

The leading principle which governs the course is, that a good course of architecture may be divided into four main parts: (*a*) *Construction*, both theoretical and practical; (*b*) *Expression*, or the technical representation of architectural and decorative ideas on paper; (*c*) *Composition*, which includes the science of convenient and effective planning, and the art of architectural and decorative design; (*d*) *History and Literature*, the broad field which the literature of architecture covers, including the history of architecture and the many interesting and important questions which arise in connection with the practice of architecture, and which often belong to allied professions.

This division is carried out in practice as follows in detail, viz.:—

a. Construction and Practice.—Under this head are grouped all of those courses bearing on the purely practical work of the profession, as distinguished from the æsthetic. The aim is to give the student a thorough grounding in the principles underlying sound construction, sanitation, and the best practice in the installation of all modern conveniences. After the pure mathematics the technical work begins with a course in mechanics of materials, in which the theory of mechanics is taught and the strength of materials discussed. This is followed by the work in structural detail, which makes direct application in a special way of the principles taught in the preceding course.

The ordinary problems relating to materials and construction are considered in the masonry construction and working drawings sections, in which the work of the various trades is taken up, and materials, methods, and workmanship thoroughly discussed, ending with a careful and systematic study of specifications. Heating and ventilation are studied in a separate course, under a specialist; while plumbing and sanitary engineering of buildings and the discussion of building contracts are subjects for special work in the seminaries.

The drawing in connection with this section is made to conform as closely as possible to the work done in the preparation of working drawings in an office, with the advantage that it can be arranged in a consecutive and progressive order. In conjunction with the lectures on the planning of domestic buildings the student makes sketch plans and designs for a series of buildings ranging from the simple labourer's cottage to the more elaborate mansions built without the hamper of a cost limit. Following this special drill in planning in design he is required to design a building of moderate cost—usually a dwelling-house—under such limiting conditions as might be imposed by a client, to prepare the complete scale working drawings, and to make typical full-size details for its construction.

Throughout all of his work the student is required to construct scientifically rather than by "rule of thumb." In the senior year he is prepared to take up the course in advanced construction, which is devoted to the consideration of steel and fireproof construction, and consists of a series of fully illustrated lectures and the working out of steel framing plans, foundations for heavy buildings, and the details of steel columns, girders, and trusses.

b. Expression.—This includes freehand drawing, drawing from the antique and from life, modelling, sketching from nature, elements of architecture, shades, shadows, and perspective. The aim of this work is to train the eye to a sense of form and colour, the hand to steadiness, and the judgment to a nice distinction between values. In all of this work the attitude of the architectural student is precisely that of the sincere art student. False, exaggerated effects for the sake of attracting attention are discountenanced, but vigorous, effective presentations of architectural ideals, in harmonious tones inspired from nature, are heartily encouraged.

c. Composition.—This subject is taught by means of a succession of problems throughout the second, third, and fourth years. Programmes of competition are issued on prearranged dates, and each student is required to hand in a set of drawings showing his own interpretation of the

problem as governed by the conditions. These drawings are judged by a jury composed of the entire Faculty of Architecture, the acceptable drawings being graded; Mention, First Mention, Second Medal, and First Medal according to the excellence of solutions. In the judgment each member of the Faculty pays particular attention to that part of the work which is the result of his special teaching; thus the Professor of Construction studies the constructability, while the Professor of Freehand Drawing criticises the sculptural details and the general colour schemes of the designs; so that not only do the drawings receive careful criticism, but the Professors are able to follow the results of their teaching, while all in the Faculty maintain a lively interest in the progress of architectural design, which is conceded to be the chief aim of architectural schools. In order to avoid the danger of becoming too theoretical the course in Working Drawings described under (*a*) CONSTRUCTION is introduced after the students have spent their second (Sophomore) year in design. Experience has shown that this work has a wholesome influence upon the students, rendering more practical and sensible their work in the latter part of the course.

d. HISTORY OF ARCHITECTURE, &c.—Ancient Greece, in her philosophy, her literature, and her art, has affected to an incalculable degree the civilisation of modern times. The architectural influence percolating through Rome and the Renaissance has brought down to the present day traditions and architectural motives which serve admirably as sources of inspiration. Imitation, however, of decorative forms which served to describe the kind of civilisation which existed in ancient times is hardly more justifiable than would be the use to-day of Egyptian hieroglyphics on wall decorations in our buildings; they belong to the past, and should be considered as possessing only historical and archæological interest. The broad principles, however, of proportion and scale, and the subtleties of line and silhouette, are matters which will always deeply concern the student of architecture, and should be carefully studied in the monuments of all ages; the reserve of the Greeks contrasted with the wonderful daring of the Gothic builders presents an illustration of the qualities which are needed in our own building architects.

The study of the History of Architecture is regarded in this course as a source of inspiration, rather than as a means of acquiring materials and motives, for use after leaving the University. While it is true that the work in design shows throughout the three years a good deal of absolute imitation of historic forms, this wholesale adaptation is encouraged in the belief, that the students will recognise in this way the true relation of historic motives to modern work; in other words, it is believed that the students will see that historic motives are useful and necessary as helps in the study of the broad principles of composition, but that they should be only considered necessary during student days. The subject is taught through lectures illustrated by models, photographs, and lantern slides.

The subjects cared for by the Seminary, such as legal questions, professional practice, special engineering problems, &c., are practically only touched upon; with all the work which belongs to the technical training of an architect it would be unwise to use the time necessary for a more exhaustive treatment of these allied subjects. The students become familiar with the breadth of field in these directions, and are advised to employ experts for the solution of all problems which do not come properly within the scope of an architect's practice.

Eminent specialists are invited each year to talk before the students on subjects allied to architecture, but which cannot be specially taught in a College of Architecture: Stained Glass, Mosaics, Furniture, Mural Painting, &c., are some of the topics that come under this head.

2. EQUIPMENT.

The material equipment is especially complete along those particular lines wherein the student needs most help and guidance. The Special Library is one of the best working libraries of its kind in the country; it comprises nearly all works of any note that have been published during the last century on the subject of architecture or architectural construction; a vast number of photographs and plates mounted and arranged for ready reference; and the bound volumes and current numbers of the leading architectural periodicals, both foreign and American.

The Library is not only most complete, but above all it is accessible at all times, and the students have free and unhampered access to books, plates, and photographs, and are encouraged and urged to use the best of the material for direct reference in the drawing rooms.

Next to the Library in direct helpfulness to the students in design is the constantly increasing collection of drawings made by advanced students and graduates of the Ecole des Beaux-Arts. Apart from questions of style these are among the best architectural drawings ever made, and their value as examples of drawing, rendering, and expression can hardly be over-estimated. A collection of plaster casts, both large and small, furnishes subjects for freehand drawing in pencil and charcoal, and choice subjects of pottery, faience, &c., for water-colour work.

There is also the large and valuable collection of wood, stone, and plaster models, illustrating the historical development of architectural forms and construction, brought together by many years' efforts by Professor Babcock.

Further, for the work in construction there is a fine collection of working drawings of well known modern buildings, which is being constantly added to by contributions from the offices of many of the leading architects in all parts of the country; and as large a collection of samples of building materials as can be handled within the limits of space available. For lecture work and illustration there is an electric lantern and a collection of several thousand lantern slides, revised and enlarged each year.

3. Fellowships.

Two Fellowships have been established—a Travelling Fellowship of $2,000 (£400), awarded in alternate years to the winner of an architectural competition, under thirty years of age and a graduate of the College; and a Resident Fellowship of the annual value of $500 (£100), open to all graduates of schools of architecture of approved standing in the world.

Course of Instruction:

LEADING TO THE DEGREE OF BACHELOR OF ARCHITECTURE.

First or Freshman Year.

History of Architecture: First half-year: Egyptian, Greek, and Roman Architecture. Second half-year: Romanesque, Byzantine, and Gothic Architecture.

Elements of Architecture: The Classic Orders of Architecture drawn and rendered in Indian ink and in colour.

Freehand Drawing: Drawing from the cast.

Shades, Shadows, and Perspective: Lectures and six hours of drawing per week in the second half-year.

Mathematics: Analytic geometry; differential calculus; integral calculus.

Descriptive Geometry: A study of the representation of lines, planes, surfaces, and solids, their intersection and developments.

Military Drill and Gymnasium: Military drill is required of all Freshmen and Sophomores.*

Hygiene and Physical Culture: A general course of lectures is given to all Freshmen.

Second or Sophomore Year.

History of Architecture: Renaissance Architecture (first half-year).

Design: Periodical problems to occupy twenty-four hours per week throughout the year.

Drawing from the Antique: Charcoal and pastel work in the Museum of Casts.

Composition: In the second half-year.

Mechanics: Resistance and elasticity of materials.

Masonry Construction: Lectures supplemented by drawings and by inspection of actual work (first half-year).

Clay Products and Building Stones: A practical course for the study of bricks, tiles, terra cotta, cements, and building stones, with reference to composition, colour, methods of production, strength, durability, weathering, &c.

Military Drill and Gymnasium: As in First Year.

Third or Junior Year.

History of Art: The development of art in general relation to architecture.

Design: Periodical problems to occupy thirty-six hours per week during the second half-year.

Modelling: Clay modelling from busts, architectural ornaments, animals' heads, &c. (second half-year).

Seminary: Reviews of current technical journals, Papers and discussions upon subjects of professional interest not covered by other courses.

Planning of Domestic Buildings: A systematic and analytical study of house planning, with special reference to American conditions.

Construction and Specifications; Working Drawings: Continuing the work of the preceding by the study of specifications, working drawings, and full-size details of a house designed by the student as for a client.

Structural Details: The design and construction of beams, columns, trusses, and the determination of safe unit stresses (first half-year).

Steel Construction and Fireproofing: This includes the study of special foundations, steel construction, and fireproofing of high and heavy buildings, as also its application to cheaper domestic buildings (first half-year).

Timber Physics: The study of timber, its physical structure, diseases, characteristics of the different kinds of wood, methods of treatment, &c. (first half-year.)

Heating and Ventilating: Lectures supplemented by practical problems (first half-year).

Water-Colour Painting: From still life groups and from nature (second half-year).

Fourth or Senior Year.

Modern Architecture: Lectures in second half-year.

Design: Periodical problems to occupy about thirty-six hours per week throughout the college year.

Theory of the Arch and Stereotomy: Including stability of arch and foundations, architectural features, bill of materials and cost (first half-year).

* Instruction in military science and tactics is provided—as required pursuant to the Acts of Congress creating the land grant, and of the Legislature of the State of New York assigning it—for the foundation of Cornell University.

Life Class: Drawing from the nude model in evenings.
Seminary: Papers on office methods, contracts, competitions, &c. (second half-year).
Principles of Decorative Design: Lectures and six hours of drawing per week throughout the year.

The annual fee for tuition is $125 (£25), covering the whole course.

There is also a special Two Years' Course in Architecture, suitable for those who do not require to take a degree, or for draughtsmen and others who have had at least three years' experience in an office. This course is:—

First Year: Design, history of architecture, freehand drawing, descriptive geometry, shades and shadows, perspective, modelling.
Second Year: Working drawings, design, history of architecture, drawing from the antique, masonry construction, sketching from nature.

The degree of Master of Science in Architecture is conferred on those who have taken the corresponding baccalaureat degree in the University, or at some other College or University of equal requirements, in case the candidate has spent at least one year at this University, pursuing an accepted course of study, upon his presenting a satisfactory thesis and passing the required special final examinations.

The Register of Students shows that the present number attending the full Course is forty-one. Of these seven are ladies, of whom Helen D. Binkerd, in her third year, took the First Mention for a design in colour for the decoration of the end of a state reception room—no mere sketch, but a most carefully elaborated design drawn to the scale of one inch to the foot.

The College publishes a record of work and progress in design in the *Annual of the College of Architecture, Cornell University*.* The *Annual* for 1898–99 contains eighteen plates of designs for various subjects made by students, and in the Introduction the aim and expectation of the authorities, that the art teaching of the College should not be limited to architecture, is expressed in the hope that the day may not be far distant when the college may be expanded into a College of Fine Arts, with the broadest possible curriculum and the highest possible aims.

* This annual, and the *Year Book of the School of Architecture, University of Pennsylvannia*, are in the Institute Library, and are worthy of consideration by those who may desire to know the progress being made in the study of design, and to appreciate the powerful influence of the methods and principles of the Ecole des Beaux-Arts therein displayed. The illustrated Catalogues of the exhibitions of the T-square Club of Philadelphia and the Saint Louis Architectural Club are in like manner also deserving of notice.

THE LATE WILLIAM YOUNG [*F.*].

It is with deep regret that we have to record the death, on the 1st November, of Mr. William Young, the architect of the New War Office. A sudden chill, a few days' illness, developing into pneumonia, and all was over. Our profession has lost one of its hardest and most enthusiastic workers, at the moment too when the greatest opportunity of his life was within his grasp. Mr. Young was, in the highest sense of the word, a self-made man. By his own untiring energy and capacity for work he won for himself a foremost place among the leading architects of the day. Born in Paisley about fifty-seven years ago, he began his professional career in the office of a Paisley architect, the late Mr. James Lamb. After his pupilage he entered the office of Mr. Tait, in Glasgow, a city which was afterwards to be the *locale* of one of his most famous works. In the early sixties he came to London to the office of Mr. C. H. Howell, then surveyor for the county of Surrey. Here, during four years, he gained much experience that stood him in good stead in after life. Besides his office work he studied much at the South Kensington Museum, in its courts and art library, and also at the British Museum, storing his mind with a knowledge of his art, till, with an ambition typical of his after success, and while still very young, he began business for himself in an office in Exeter Hall.

Like most young beginners he was not at first overburdened with commissions, so to keep head and hand in practice he produced his first book, *Picturesque Studies of Old English Churches*. Just then the Gothic Revival was in full swing. Mr. Young had been brought up under its influence. Little wonder, then, that his next book, published shortly after the first, *Architectural Studies: a Work of Original Designs*, should be permeated with Mediævalism. In after life he used to joke about these efforts in architectural literature, but incidentally they brought him his first commissions, and one lifelong friend, the Earl of Wemyss, then Lord Elcho. His Lordship was on the Council of the National Rifle Association, and secured the services of Mr. Young to design and carry out the refreshment pavilion at Wimbledon Camp—a huge structure of timber, covering an area of some 50,000 square feet, with a bar 200 feet long, and dining-rooms capable of accom-

modating upwards of 1,000 persons. So smartly and so satisfactorily was this work carried out that it became the foundation of its designer's fortune. Lord Elcho introduced him to his brother-in-law Mr. Wells, M.P., and to Mr. Eley, for both of whom he built large country-houses. Holmwood, in Hants, the residence of Mr. Wells, Haseley Manor, Warwick, Oxey Grange, Mr. Eley's house, and others about that time are all of a late Domestic Gothic type. The influence of Gothic was still upon him, but Mr. Young was quick to see and acknowledge its limitations, and with characteristic energy gave himself up to the study of Classical work, with the result we see in Chelsea House, the town mansion of Earl Cadogan, one of the largest in the West End, with a very fine interior, more especially the staircase. Like Lord Wemyss, Earl Cadogan became a friend as well as a client, and consulted Mr. Young in the important work of laying out the Cadogan estate in Chelsea, where he also designed four or five mansions in Cadogan Square. From this time onward his hands were always full of work, principally large country houses for members of the nobility. Not to take them in chronological order we may mention Chevening Hall, Kent, for Earl Stanhope; a mansion in Mayfair for Lord Sudeley; another for the Earl of Albemarle in Cadogan Square; Easton Lodge, for Lord Brooke; Sefton Lodge, Newmarket, for the Duchess of Montrose; Duncombe Park (after the fire), for the Earl of Faversham; Staircase Hall at Panshanger, for Earl Cowper; others again for Lord Bury, Sir Henry Palley, and Col. Farquharson. Then in later years he again built for Lord Wemyss and Earl Cadogan; for the former he completed Gosford House, near Haddington, a most important commission. The original mansion was built by the brothers Adam in the first years of the century. It was never finished till Mr. Young took it in hand. Leaving the Adams' building as the centre of the composition, he added two extensive wings in harmony with the original design. One of them contains a magnificent marble staircase hall. At the same time the whole arrangements of the house were remodelled, terraces and steps constructed around it, till Gosford became one of the most sumptuous mansions in the country.

Photo. by Dencalain, Strand.

THE LATE WILLIAM YOUNG.

For Earl Cadogan he was building Culford Hall, in Suffolk—another fine work which is not quite completed yet. In recent years he has been building largely for Lord Iveagh, first a splendid new ballroom and other additions to his Lordship's house in St. Stephen's Green, Dublin, then alterations to Farmleigh, in the outskirts of Dublin, and lastly at Elveden Hall, in Suffolk, formerly the residence of the Maharajah Dhuleep Singh. Here the work is on the most extensive scale. Fine stables have been built, and cottages and lodges throughout the estate, while the hall itself, now being reconstructed and enlarged in the most palatial manner, is not nearly completed.

Most of these works are distinguished by the grandeur of the scale on which they are carried out, by stately halls and staircases such as at Gosford, Duncombe Park, and St. Stephen's Green, and by the general excellence of their internal arrangements. Over the latter Mr. Young was specially particular. Probably no man knew better than he did the many requirements of a great country house, or how more effectively to carry them out. To this must be attributed much of his success in this interesting department of architectural practice.

It is said sometimes that an architect's work runs in grooves. Be that as it may, Mr. Young did

but little ecclesiastically. He restored and made additions to Aberlady Church, N.B.; and built one at Halton, Warwick; but his chief effort in this connection is the new parish church at Peebles, a work in which he endeavoured to incorporate some of the characteristic features of Scottish Gothic, such as in the window tracery, the crow-stepped gables, and notably in the tower, which is covered by an open crown, much after the manner of the well known examples at Edinburgh and Aberdeen.

One can easily understand that with such a *clientèle* as Mr. Young secured he had little inclination and less need to enter the lists of competition, and yet to competition he owed the greatest executed work of his life. A few years before the competition for the Glasgow Municipal Buildings took place he had spent a considerable time in Italy, studying the masterpieces of Rome, Florence, and Venice, and perfecting his knowledge of Classical architecture. The Glasgow opportunity proved too tempting to be resisted, and he threw himself into the contest with all his energy and enthusiasm, stimulated by his recent visit to Italy. The result is well known: after a first and abortive competition a second was instituted, a double contest of sketches, and then of ten competitors selected to send in matured drawings.

Two stories characteristic of the man may be recalled in this connection. When the mottoes of the selected ten were published they were in alphabetical order, and Mr. Young's, being "Viola," was at the end of the list. "The last shall be first," he exclaimed, and set to work on the final plans with renewed energy and hope. A few days before the decision was made known Lord Wemyss, in the course of a friendly chat, jocularly asked him whether he would take £1,000 for his chance. "No," was the reply. "Well, then, £5,000?" queried his Lordship. "No," was the reply again. "£10,000 then?" "No, no," said Young; "I would rather carry out the job;" and carry it out he did. With the possible exception of Manchester's Gothic Palace, it is the largest and most imposing group of municipal buildings in the kingdom. The cost was something like £500,000, and it is to the honour of the Glasgow Corporation that such a sum was willingly voted to ensure the work being completed with a grandeur and dignity befitting the importance of their great city. The foundation stone was laid on the 6th October 1883; for six years the work went on, and in October 1889 the Corporation took possession of their new and magnificent home. The internal arrangements are, again, a marvel of planning, the multifarious requirements of business offices and state apartments being fulfilled in the most complete manner, while the halls and staircases and corridors are sumptuous features in the general scheme. The building, of course, has been much criticised—it is too important to escape that—and it may be urged with some reason that the north and south sides, more especially the north, are finer and more dignified than the west or principal front; or again, that the lavish use of marble in the great staircase has been overdone; but when all has been said it remains an honourable monument to its distinguished architect and a civic palace of which Glasgow may well be proud.

There can be little doubt also that the success of this great building was no small factor in securing his appointment for the still greater work—the New War Office in Whitehall. Here, if the guerdon of success promised to be high, the responsibilities were even higher still. He had to contend with a very awkwardly shaped site, every available foot of which was required for the accommodation of this great public department. For over two years past he had devoted himself to the working out of his scheme; the foundations are nearly completed, the working plans and many details for the superstructure are finished, and the quantities are now being taken out. The published design has been much improved upon both in plan and elevation, resulting in a building of great dignity and breadth of treatment, fully justifying his selection by the Government. Probably some other architect may now have to be associated with the work, but if so it is to be hoped it will be carried out as far as possible exactly as its author has left it—a monument to his memory. How ardently he looked forward to its completion can only be measured by the greatness of the opportunity, now, alas! passed away with him for ever.

Mr. Young became a Fellow of the Institute in 1891, and, besides reading papers on several subjects, served for some years on the Art Standing Committee. It was during his time that the discussions and correspondence with the London County Council regarding the new Vauxhall Bridge and the Strand Improvement Scheme were going forward; to both subjects he contributed much sound advice, and it may not be generally known that to his suggestion we owe the crescent road so much in evidence lately in the Strand scheme. When the original plan of the new road from Holborn to the Strand came before the Art Committee the branch roads from its southern end to the south-west and south-east respectively were laid out in straight lines. Mr. Young suggested they should be formed into a great crescent; the plan was accordingly altered, sent back to the County Council, and ultimately adopted. He looked forward with much interest to seeing what the selected architects would do with such a splendid opportunity, but the very week the designs were on view he died.

Mr. Young was a man of many parts, with

views on many subjects, professional and otherwise, a fluent writer and an engaging conversationalist. Besides the books already mentioned he published one on *Town and Country Residences* and a splendidly illustrated monograph on *The Glasgow Municipal Buildings*. For many years he edited the *Architect's Pocket Book* for Messrs. Spon, and quite lately he edited for the same firm a fine folio reproduction of Piranesi's great work on *Italian Architecture, Painting, and Sculpture*, originally published in Rome in 1758.

Mr. Young leaves a widow and one son, Mr. Clyde Young, who served his articles with his father, and has been in the office ever since. Personally he was of a genial disposition, a true friend, always ready to lend a helping hand, and liberal almost to a fault.

J. M. Brydon.

9, Conduit Street, London, W., 24*th Nov.* 1900.

CHRONICLE.

The Library: a recent Donation.

The munificence of the Architectural Union Company (of which Mr. Arthur Cates is Chairman) in placing £30 at the disposal of the Institute for the purchase of books has just enriched the Library with the following important works:—

Les Grands Prix de Rome d'Architecture de 1850 *à* 1900.

Epidaure. Restauration des Principaux Monuments du Sanctuaire d'Asclépios, by Defrasse and Lechat.

La Renaissance en France, by Palustre.

Die Baukunst Spaniens, by Max Junghändel.

The first of these differs from its companions in being not a record of accomplished work, but a series of designs which year by year have gained the blue ribbon of the French National School of Architecture. There is a distinction attaching to the Grand Prix de Rome greater than that of any other art students' prize in the world, and many of those who have gained it have become the foremost of French architects. We therefore naturally expect to find that many of the designs are excellent, and we are not disappointed. But the value of the collection by no means lies in their individual excellence. They must not be regarded as so many separate designs without cohesion amongst themselves. Their relation to each other is very intimate, for they are the chosen blossoms put forth yearly by the French system of training in architecture, and we feel that here at least we have a living art, self-contained, self-reliant and progressive, practically uninfluenced by the art of other nations, yet influencing the art of most other nations in the highest degree.

After looking through such a mass of ambitious design, to take up the work on *Epidaurus* is to enjoy a well-earned rest. Here we have space and leisure and Attic simplicity. The legends surrounding the name of Æsculapius claim our attention as well as descriptions of the ruins. Splendid plates accompany the text, showing both ruins and restorations of the temples of Æsculapius and Artemis, the Tholos, the Propylæa and the Theatre, with details of the Orders employed, and many good illustrations of the statues and fragments of sculpture. There is no hurry, no crowding; everything has its proper recognition and space. It is indeed a beautiful book.

No one should miss looking through the delightful volumes of Palustre. They treat chiefly of transitional and early work, with a leaning towards the picturesque. There are but few plans, exterior views forming the staple of the illustrations. Chimney-pieces, vases, fountains and window glass are noticed, and the ever-welcome sculpture of Jean Goujon has its place. The work is divided into provinces, and gives the student intending to travel in any particular district valuable information as to the buildings in this style to be found within it. To the traveller it will bring many interesting reminiscences, but few, very few, will find that they have seen everything here delineated.

Die Baukunst Spaniens forms as it were the heavy artillery and infantry supports to Mr. Andrew Prentice's brilliant cavalry reconnaissance in Spain. It consists of large photographic plates of all the more important Spanish work from earliest times to late Renaissance, with some detail in colour from the Alhambra. The whole is divided into six styles, and each plate bears the title of its style—an excellent arrangement. It is produced with German thoroughness and appreciation of the rigidity of facts and the fascination of theory, rather than the poetry of feeling. However, here is represented Spanish architecture, realistic as lens can make it, and lacking only in that grace which light and atmosphere

lend to the actual buildings, and which an artist sometimes catches.

This completes the list of books. They form a gift of which donors and recipients alike may feel proud.

J. HUMPHREYS JONES.

The Church Crafts League.

The Church Crafts League, which held its first annual meeting last Tuesday, was formed for the purpose of bringing the clergy, and others responsible for the construction and decoration of churches, into direct relation with artists and craftsmen engaged upon work of the kind. By this means the League hopes to restore individual character to art in churches, and to remedy the evil results of commercialism in the matter. The Archbishop of York, the Bishop of Bristol, the Bishop of Stepney, and G. F. Watts, R.A., are Patrons; the President is the Bishop of Rochester; and the Committee of Direction includes Lord Balcarres, M.P., Mrs. Russell Barrington, Rev. Charles Biggs, Canon Rhodes Bristow, Rev. Percy Dearmer, Conrad Dressler, T. Dyer Edwardes, J.P., Alexander Fisher, Miss Emily Ford, Canon Charles Gore, Hon. Mabel de Grey, Henry Holiday, Canon Scott Holland, W. Goscombe John, A.R.A., T. Stirling Lee, Miss Lowndes, J. Phillips, Sir W. B. Richmond, R.A., Canon Armitage Robinson, Byam Shaw, C. O. Skilbeck, A. G. Walker. Clergy, churchwardens, or donors who desire guidance in regard to architecture, painting, sculpture, wood-work, metal-work, glass, embroidery, or any form of decorative work, may address applications to the Secretary of the League, at the Church House, Westminster, S.W. The Secretary furnishes the list of artist members of the League who work in the particular craft specified, with a statement of places where examples of their work may be found. If further guidance is needed, an explicit statement of the case must be given, and the Committee deals with it at its next monthly meeting. The membership numbers 164, of whom 43 are artist members. The annual subscription is 5*s*.

The Glasgow Institute of Architects.

Since the current KALENDAR went to press, the office-bearers of the Glasgow Institute have been appointed for the new Session as follows:—*President*: Mr. John Jas. Burnet; *Vice-President*: Mr. Alex. Petrie; *Auditor*: Mr. W. Forrest Salmon; *Secretary and Treasurer*: Mr. C. J. MacLean, Writer; *Council*: Messrs. Alex. Petrie, J. J. Burnet, J. A. Morris, David Barclay, W. Forrest Salmon, A. N. Paterson, John Keppie, H. K. Bromhead, Jas. Lindsay, Miles S. Gibson, N. Macwhannell, D. McNaughtan, Campbell Douglas, T. L. Watson, Thos. Baird, jun., J. M. Monro, Alex. McGibbon.

MINUTES. II.

At the Second General Meeting (Ordinary) of the Session 1900–1901, held Monday, 12th November 1900, at 8 p.m., Mr. William Emerson, *President*, in the Chair, with 46 Fellows (including 18 members of the Council), 48 Associates (including 2 members of the Council), 6 Hon. Associates, 1 Hon. Corresponding Member, and numerous visitors, the Minutes of the Meeting held Monday, 5th November [p. 24], were taken as read and signed as correct.

A Paper by Professor Lanciani, D.C.L. Oxon. [*Hon. Corr. M., Rome*], entitled ARCHITECTURAL RESULTS OF THE LATEST EXCAVATIONS IN THE FORUM, having been read by the author, and illustrated by a series of photographic views shown by the lantern, a vote of thanks for the Paper and illustrations was passed to Professor Lanciani by acclamation.

Professor Lanciani, in reply, having referred to the advantages to be derived by architectural students from the recently established British School at Rome, and given assurances of the desire of his countrymen to aid the progress of the School, Professor Aitchison, R.A., responded on behalf of the Meeting.

The proceedings then closed, and the Meeting separated at 10 p.m.

LEGAL.

Building used partly for Trade and partly as a Dwelling.

At the Southwark Police Court, on the 17th and 24th October, Mr. Kennedy heard a case arising out of an objection by the district surveyor to the mode of construction of the Horseshoe beerhouse in the Old Kent Road. The ground of objection was that the plans did not provide for the separation of the living-rooms from the trading portion of the premises by fireproof materials. —Mr. Percy Gates appeared for the builder, and Mr. Horace Avory for the County Council.—The case raised a question under the London Building Act, which had already been decided against the Council with regard to a fully licensed house, but which was now raised for the first time in regard to a beer and wine house. Mr. Avory stated that in the opinion of the Council licensed premises ought to be brought under the same regulations with regard to fireproof construction as were required in regard to shops and factories which were used partly for trade and partly for residential purposes. The Council desired to have an opportunity of getting the decision in *Carritt* v. *Godson* [JOURNAL, Vol. VI. 1899, p. 460] reviewed by the Court of Appeal, and were prepared to carry the question, if necessary, to the House of Lords. He also submitted that there was a stronger case for separation in regard to a beerhouse, because the trading portion of the premises was undoubtedly the lower portion, and could not be held to include the whole house, as in the case of an inn. Mr. Kennedy, after consideration, came to the conclusion that he could not distinguish the present case from that of *Carritt* v. *Godson*. He therefore allowed the appeal. But he agreed to state a case for the opinion of the High Court.